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Capece 2-11

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application:	Capece, Christopher J.
Serial No.:	10/686,451
Filed:	10/15/2003
Group Art Unit:	2688
Examiner:	Stein, Julie E.
For:	NEURAL NETWORK-BASED EXTENSION OF GLOBAL POSITION TIMING

CORRECTED APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Appellant submits this brief in response to the Notice of Non-Compliant Appeal Brief mailed August 17, 2006.

Introduction

There is no *prima facie* case of obviousness against any of Applicant's claims. The reference relied upon by the Examiner has nothing to do with determining future time information, which is provided by Applicant's claims. There is no motivation to modify the reference to include such a feature because it provides no benefit to the position or location determination made in that reference. Additionally, the reference's arrangement would have to be completely redesigned or replaced in order to try to somehow come up with a result consistent with Applicant's claims, which can only be accomplished using improper hindsight reasoning.

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Real Party in Interest

Lucent Technologies, Inc., which is the Assignee of this application, is the real party in interest.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of the Claims

Claims 1-13 stand rejected under 35 U.S.C. §103.

Status of Amendments

There are no unentered amendments.

Summary of Claimed Subject Matter

This invention relates to maintaining accurate time information for wireless communications. It is known to gather timing information from a Global Positioning System (GPS) for use by wireless communication base stations, for example. There are times where the communication with the GPS may be lost. During such times, it is necessary to maintain accurate time information to ensure reliable wireless communications. Base station internal timers are not reliable enough for this task. Applicant's invention provides future time information that can be utilized in the event that GPS time information is not available, for example. (Para. [0003 -0007])

Independent claim 1 recites:

> 1. A method of maintaining time information for a wireless communications base station, comprising:
>
> using a neural network for generating a data set that provides future time information.

Example embodiments upon which this claim reads are shown, for example, in Figures 1 and 2. Figure 1 schematically illustrates selected portions of a wireless communication system 20. A base station controller 22 controls communications through a base station in a generally known manner. The base station controller 22 receives timing information from a global position system (GPS) 24 using available techniques. The timing information allows the base station controller 22 to maintain continuous and accurate communications as required within the wireless network. (Para [0016])

There are instances where effective communication between the base station controller 22 and the GPS 24 are not possible. For such situations, the illustrated arrangement includes a future time data set 26 for providing time information during intervals where communication with the GPS 24 is lost. A neural network 28 generates the future time data set 26, which in one example includes a plurality of coefficients for providing future time information based upon an input starting time. (Para [0017])

Referring to Figure 2, the neural network 28 generates the data set 26 based upon input received from the GPS 24. At 42, global position system time information is collected by an appropriate portion of the base station controller 22. The amount of time information collected depends upon the desired accuracy and length of time to be covered by the data set 26. The gathered information in this example is preprocessed at 44 to place it into a format that is more speedily handled by the neural network 28. Once receiving the information, the neural network 28 learns and generates the data set at 46. (Para [0023])

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Grounds of Rejection to be Reviewed on Appeal

Claims 1 and 4-7 stand rejected under 35 U.S.C. §103 based upon EP 0 631 453 ("the *Telia* reference").

Claims 2-3 and 8-13 stand rejected under 35 U.S.C. §103 based upon a proposed combination of the *Telia* reference with an IEEE publication ("the *Bullock* reference").

ARGUMENT

A. The *Telia* Reference Does Not Render Any Of Applicant's Claims Obvious.

There is no *prima facie* case of obviousness. Applicant respectfully submits that there is no *prima facie* case of obviousness because there is no motivation or suggestion for modifying the teachings of the *Telia* reference as proposed by the Examiner. The *Telia* reference has nothing whatsoever to do with generating a data set that provides future time information. The proposed modification of Telia's arrangement provides no benefit in the context of that reference and, therefore, there is no motivation for making it. Additionally, the level of modification required to try to even introduce such a feature into the *Telia* reference requires completely redesigning or replacing *Telia's* arrangement, which cannot be done when attempting to establish a *prima facie* case of obviousness.

The *Telia* reference is exclusively concerned with locating mobile stations (e.g., cell phones). There would not be any benefit to adding a feature to provide future time information because that would not in any way enhance (or have any possible connection with) *Telia's* position or location determination. When there is no benefit from a proposed modification to a reference,

the legally required motivation for making it is missing and there is no *prima facie* case of obviousness. On that basis alone, the rejections must be reversed.

The Examiner's position appears to be that because a "timing advance" is used in the *Telia* reference and a neural network is used for ***locating*** a mobile station, that it would be obvious to use *Telia's* neural network for generating a data set that provides future time information for a wireless communications base station.

The *Telia* reference is only concerned with ***position*** information. The neural network in that reference uses a set of reference data gathered by a measuring mobile that carries out measurements over relevant traffic routes. The neural network is eventually trained to provide a desired level of ***position information*** accuracy.

The *Telia* reference discusses using a "timing advance (TA) which provides an approximate distance." (Column 3, lines 21-22) The *Telia* reference expressly teaches using the timing advance information as an indication of ***distance*** and not as an indication of time. While a timing advance technically is based upon the amount of time that it takes for a signal to be transmitted between a mobile station and a base station (typically less than a second), there is nothing within the *Telia* reference that in any way suggests somehow extracting from that for generating a data set of future time information. There is no possible way of obtaining that result from the teachings of the *Telia* reference because it is exclusively concerned with ***locating*** mobile stations.

Absent Applicant's disclosure, there is no possible way of finding any motivation for modifying the *Telia* reference for the purpose of generating future time information. Even with the hindsight benefit of Applicant's disclosure, it is difficult to imagine how one skilled in the art

would be led to modify *Telia's* arrangement to completely change it from one that provides location information to one that provides a data set that provides future time information.

The inputs to the neural network of the *Telia* reference are intended to generate ***position or location*** information. Even the timing advance of the *Telia* reference does not provide time information in the sense of a time of day. Rather, it uses the amount of time it takes a signal to travel between a mobile station and a base station and the known signal travel speed for determining "an approximate ***distance***." Assuming the timing advance of *Telia* is used contrary to *Telia's* express teaching that it provides an approximate ***distance***, it only provides information regarding how much time it takes for a signal to travel from a mobile station to a base station. An indication of such an amount of time (typically less than a second) does not, in any way, enable the neural network of the *Telia* reference to generate future time information. The complete redesign of *Telia's* neural network that would be required by one attempting to arrive at an arrangement even remotely close to Applicant's claimed invention (if one ignores the fact that there first somehow would had to have been some motivation for doing so) can only be based upon hindsight reasoning. Of course, that is not a permissible basis for attempting to establish a *prima facie* case of obviousness.

The proposed modification to the *Telia* reference suggested by the Examiner in rejecting claims 1 and 4-7 cannot be made.

B. <u>The Proposed Combination of the *Telia* and *Bullock* References Does Not Render Any of Applicant's Claims Obvious.</u>

There is no prima facie case of obviousness against any of claims 2-3 or 8-13 because the proposed combination of the *Telia* and *Bullock* references cannot be made. There is no motivation to combine references when the proposed modification or addition provides no benefit in the context of the primary reference. In this instance, the Examiner proposes to add *Bullock's* teaching

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that GPS communications can fail to the *Telia* reference. The proposed modification cannot be made because it provides no benefit to *Telia's* location or position determination regarding a mobile station (e.g., a cell phone). The fact that GPS communications can fail does not add anything of any value to *Telia's* arrangement. Even if one could extract from that fact to conclude that there is a need to provide time information absent the GPS time information (which Applicant does not concede), that still has nothing to do with *Telia's* position or location determination. Therefore, there is no motivation for making the proposed combination and there is no *prima facie* case of obviousness.

CONCLUSION

There is no *prima facie* case of obviousness against any of Applicant's claims. The modifications to the *Telia* reference proposed by the Examiner cannot be made. The rejections must be reversed.

Respectfully submitted,

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September 18, 2006
Date

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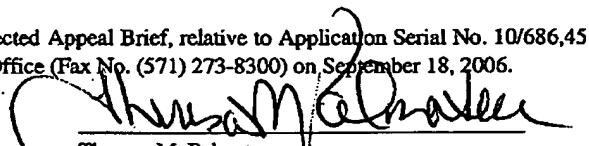
CERTIFICATE OF FACSIMILE

I hereby certify that this Corrected Appeal Brief, relative to Application Serial No. 10/686,451, is being facsimile transmitted to the Patent and Trademark Office (Fax No. (571) 273-8300) on September 18, 2006.



Theresa M. Palmateer

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EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.

APPENDIX OF CLAIMS

1. A method of maintaining time information for a wireless communications base station, comprising:

using a neural network for generating a data set that provides future time information.

2. The method of claim 1, wherein the data set is useful for a first time interval and including generating another data set for a second, later time interval.

3. The method of claim 2, including repeatedly generating another data set for subsequent time intervals.

4. The method of claim 1, including

gathering time information from an external source;

inputting the gathered time information to the neural network; and

generating the data set based upon the inputted time information.

5. The method of claim 4, wherein the gathered time information extends over a selected period and including

comparing time information from the data set for a period corresponding to the selected period with the gathered time information; and

changing at least one characteristic of the neural network when the data set time information does not correspond to the gathered time information within a selected range.

6. The method of claim 5, including changing the characteristic of the neural network by changing at least one of a number of layers in the neural network, a number of neurons in the neural network or a complexity factor of the neural network.

7. The method of claim 5, including repeatedly performing the steps of comparing and changing until the data set time information corresponds to the gathered time information within the selected range.

8. The method of claim 1, including

receiving time information from an external source;

determining when the external source time information is not available; and

using the data set for time information when the external source time information is not available.

9. The method of claim 8, including using an initialization time value and the data set to generate time information until the external source time information becomes available.

10. The method of claim 8, wherein the external source time information comprises global position system time information.

11. The method of claim 1, wherein the data set comprises a plurality of coefficients for generating future time information based upon a start time.

12. The method of claim 1, including providing at least more than 24 hours of future time information using the data set.

13. The method of claim 12, including providing at least two weeks of future time information using the data set.